

REMARKS

The application has been reviewed in light of the Office Action dated July 22, 2003. Claims 1-8 are pending and presented for reconsideration, with claims 1 and 8 being in independent form.

Claims 1-4 and 8 were rejected under 35 U.S.C. §102(b) as purportedly anticipated by U.S. Patent No. 5,276,670 to Nogami et al. Claims 5-7 were rejected under 35 U.S.C. §103(a) as purportedly obvious over Nogami in view of JP patent publication no. 2000-222776A1 (Shibakuchi).

Applicants have carefully considered the Examiner's comments and the cited art, and respectfully submits that independent claims 1 and 8 are patentable over the cited art, for at least the following reasons.

This application relates to a phase-change type optical information recording medium which has excellent recording and reproducing characteristics irrespective of the linear velocity. In particular, for such a phase-change type optical information recording medium, when a minimum recording linear velocity is  $V_1$ , a maximum recording linear velocity is  $V_2$ , and a degree of modulation at the time of reading out information is  $I(V)$ , then a value of  $I(V_2)/I(V_1)$  is within a range from 1 to 1.2.

For example, independent claim 1 is directed to a phase-change type optical information recording medium which comprises a transparent substrate, a first protective layer on the substrate, a recording layer on the first protective layer, a

second protective layer on the recording layer, and a reflective layer on the second protective layer. When a minimum recording linear velocity is  $V_1$ , a maximum recording linear velocity is  $V_2$ , and a degree of modulation at the time of reading out information is  $I(V)$ , a value of  $I(V_2)/I(V_1)$  is within a range from 1 to 1.2.

Independent claim 8 is directed to a phase-change type optical information recording medium comprising at least one recording layer which records information based on crystalline-to-crystalline or crystalline-to-amorphous transition. The phase-change type optical information recording medium is rotated around a center of rotation when recording information in or reading information from said recording layer. When the minimum and maximum linear velocities of rotation are respectively  $V_1$  and  $V_2$ , then a value of a degree of modulation corresponding to the maximum linear velocity  $I(V_2)$  divided by a degree of modulation corresponding to the maximum linear velocity  $I(V_1)$  is between 1 and 1.2.

Applicants respectfully submit that the cited art does not disclose or suggest independent claims 1 and 8.

Nogami, as understood by Applicants, is directed to a phase change optical disk which purportedly does not require higher irradiation power at its outer peripheral position than that at its inner peripheral position, i.e. does not provide reduced recording sensitivity (or erasing sensitivity) at a position with a higher linear velocity.

The Office Action states that Nogami discloses in Fig. 9 and

at column 9, lines 45-56 that if a minimum recording linear velocity is  $V_1$ , a maximum recording linear velocity is  $V_2$ , and a degree of modulation at the time of reading out information is  $I(V)$ , then a value of  $I(V_2)/I(V_1)$  is within a range from 1 to 1.2.

Applicants respectfully disagree.

Fig. 9 and column 9, lines 45-56 of Nogami present a comparison of the relation between the linear velocity and the DC modulation degree in two optical disks (a conventional disk and a disk according to the above-discussed teachings of Nogami).

According to Nogami, satisfactory recording characteristics (i.e. signal-to-noise ratio) can be obtained at different recording linear velocities by varying the power used for recording with respect to linear velocity  $v$ . The power of the laser beam is changed such that the power of the laser beam to be directed to an inner peripheral position of the disk is set larger than that directed to an outer peripheral position thereof. The region where recording is carried out at a higher linear velocity and the region where recording is carried out at a lower linear velocity are arranged so that they are clearly separated on the disk, i.e. the former is arranged on the inner peripheral position and the latter is arranged on the outer peripheral position on the disk. Thus, according to Nogami, different regions with different physical properties, respectively, are formed on a recording medium.

On the other hand, the claimed invention (of independent

claims 1 and 8) enables recording at different recording linear velocities regardless of which region the recording is carried out. For this purpose, the physical properties of the recording layer are optimized using the degree of modulation  $I(V)$ . By adopting such a construction, the claimed invention makes it possible to obtain satisfactory recording properties (for example, overwriting properties) at different linear velocities ranging from  $v_1$  to  $v_2$  in all the regions on the recording medium. Nogami simply does not disclose or suggest these features of the claimed invention.

Shibakuchi does not cure the above-mentioned deficiencies of Nogami.

Shibakuchi, as understood by Applicants, is directed to a write-once optical recording medium in which information is recorded and reproduced by the phase transition of a recording material by irradiation with laser light and in which the change rate of reflectance due to the phase transition from an amorphous phase to a crystal phase is increased to increase the CN ratio of the reproduced signals and to obtain excellent storage property for a long time of the information. The Office Action cites Shibakuchi as purportedly disclosing a recording layer containing  $AgInSbTe$  as a main component, with nitrogen added thereto.

However, Applicants find no disclosure or suggestion by the cited art that the physical properties of the recording layer are optimized using the degree of modulation  $I(V)$ , such that satisfactory recording properties (for example, overwriting

properties) can be obtained at different linear velocities ranging from v1 to v2 in all of the regions on the recording medium, as provided by the claimed invention.

Accordingly, for at least the above-stated reasons, Applicants respectfully submit that independent claims 1 and 8, and the claims depending therefrom, are patentable over the cited art.

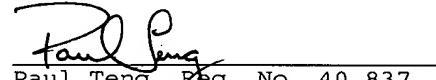
The Office is hereby authorized to charge any fees that may be required in connection with this response and to credit any overpayment to our Deposit Account No. 03-3125.

If a petition for an additional extension of time is required to make this response timely, this paper should be considered to be such a petition, and the Commissioner is authorized to charge the requisite fees to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Allowance of this application is respectfully requested.

Respectfully submitted,

  
Paul Teng, Reg. No. 40,837  
Attorney for Applicants  
Cooper & Dunham LLP  
Tel.: (212) 278-0400